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HEALTHCARE WASTE MANAGEMENT OF THE GOVERNMENT HOSPITALS IN NORTHERN PHILIPPINES

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Abstract

A validated Manual on Healthcare Waste Management (HCWM) for Level 1 Government Hospitals in Northern Philippines was developed based on the (1) profile of the (a) healthcare facility as to services, bed capacity, bed occupancy, and number of outpatients, and (b) medical staff as to HCWM training, awareness, vaccination, and staff contingent; (2) status of HCWM practices among respondents as to HCWM generation, segregation and handling, storage containers, storage areas, collection and on-site transport, off-site transport, treatment, final disposal, regulations, policy and budget, and sanitation and wastewater; and (3) the SWOT analysis of the HCWM implementation. Descriptive research design was employed on the current status of HCWM among 22 respondent hospitals as the identified cases. Standardized questionnaires adapted from the UN–WHO HCWM Rapid Assessment Tool were used and a survey based on observation and key informant interviews were the tools for data collection. Profile results indicate level 1 government hospitals responding to their functions of delivering quality services to their clients but staff profile were generally insufficient in terms of trainings responsive to proper implementation of HCWM. As to HCWM practices, there was awareness of HCWM requirements and diligent effort to comply, but HCWM efforts from waste generation, segregation and handling, storage containers, storage areas, collection and on-site transport, off-site transport, treatment and disposal were hampered by the usual problems in public facilities such as lack of

logistics and funding and lack of training on HCWM and dissemination of rules and regulations, and inadequate provision of policy and budget. In conclusion, the Manual was deemed appropriate, helpful, and acceptable as a general guide for HCWM initiatives and hence is recommended for adoption.

Keywords: Healthcare Waste Management, Government Hospitals, HCWM Practices, Manual of HCWM

Introduction

The risk associated with healthcare waste and its management has gained attention across the world in various events, local and international forums, and summits. However, the need for proper healthcare waste management has been gaining recognition slowly due to the substantial disease burdens associated with poor practices, including exposure to infectious agents and toxic substances. Despite the magnitude of the problem, practices, capacities and policies in many countries in dealing with healthcare waste disposal, especially developing nations, is inadequate and requires intensification (Ananth et al., 2009).

The World Health Organization (WHO) describes all waste generated by healthcare establishments, research facilities, and health laboratories as healthcare waste. This healthcare waste is classified as non-risk or general healthcare waste, which is comparable to domestic waste and as hazardous waste, which has the potential to pose a variety of health risks. Hazardous healthcare waste may also include infectious waste, pathological waste, sharps, pharmaceutical waste, genetoxic waste, chemical waste, waste with high heavy metal content, pressurized containers, and radioactive waste (Chartier et al., 2014).

The unsafe disposal of medical waste, such as contaminated syringes and needles is a public health risk. In 2000, WHO estimated that contaminated syringes caused 21 million hepatitis B virus (HBV) infections (32% of all new infections; 2 million hepatitis C virus (HCV) infections (40% of all new infections; and at least 260,000 HIV infections (5% of all new infections). Results of a WHO assessment conducted in 22 developing countries in 2002 showed that the proportion of healthcare facilities that do not use proper waste disposal methods ranges from 18% to 64% (World Health Organization, 2011).

In the Philippines, health care waste management is a pressing concern. Sañez (2008) presented a report on the regional distribution of unregistered hospitals as hazardous waste generators as of 2003 to the First Thematic Working Group on Solid and Hazardous Wastes on February 28-29, 2008 at Singapore. The report revealed that 1,492 out of 1,719 or 86.79

percent hospitals in the country were unregistered. Four provinces in the Northern Philippines, Ilocos Norte, Ilocos Sur, La Union and Pangasinan have 119 out of 121 or 98.34 percent unregistered hospitals. In short, only two (2) managed to register as hazardous wastes generator.

The Health Care Without Harm Asia (2007) found out in a study that over the past few years, public concern has been growing over the disposal of wastes produced by healthcare facilities in the Philippines. In the same vein, several reports have cited large, albeit inconsistent, figures of the amount of infectious wastes hospitals in Metro Manila produce daily, and little information is available on what is done with these wastes, especially after the banning of incineration in the country. Most recently, these concerns have been fueled by reports that some of these wastes end up in open dumpsites and in some cases like in rivers, that lead to some sectors to call for the allowing of incineration once again.

While no recent publicly available data exist on how hospitals today dispose of their infectious and hazardous wastes, some studies provide an indication of where these go. According to JICA, 47 percent of the 158 facilities they surveyed then disposed of their infectious wastes through incineration. The more recent ADB study estimates that only 5 tons of infectious wastes per day are disposed of through autoclave, microwave or incineration, and approximately 22 tons per day are either buried on-site or discarded along with the rest of the waste collected by the municipal waste collection service (Health Care Without Harm Asia, 2007).

Molina (2002) revealed that although most of the hospitals perform waste segregation, less than 50 percent of the 144 hospitals studied did not have the proper mechanisms for proper waste handling and segregation. Incineration and landfill were used for final disposal of wastes. Only two out of five hospitals had an existing waste management committee and a separate budget allocation for waste management program. As such, while the Philippine Clean Air Act was heralded as landmark legislation, the question of what is now being done with the voluminous infectious wastes generated begs to be asked.

In Northern Philippines, narrative accounts of the key informants of this study underscored problems that concern their hospitals' healthcare waste management. One of the most commonly encountered problems of the government hospitals is the lack of fund for the proper implementation of their HCWM programs. They blame this lack of budget to the devolution of government hospitals to the Local Government Units (LGUs). Hospital personnel complain about the scarcity of materials used for handling their wastes. Another concern is the poor security of the on-site storage area for hospital wastes. Often, most government hospitals lack a specific area for such storage.

Inspired not only by the WHO's challenge that the management of healthcare waste requires increased attention and diligence to avoid the substantial disease burden associated with poor practice, including exposure to infectious agents and toxic substances and but also given the aforementioned premises, the researchers conceptualized this study to look into the status of healthcare waste management among level 1 government hospitals in the Provinces of Ilocos Norte, Ilocos Sur, La Union and Pangasinan as bases in developing a research-based manual on healthcare waste management.

Objective

This research evaluated the current practices of the level 1 government hospitals in Northern Philippines on healthcare waste management (HCWM). Specifically, it looked into the: hospitals' healthcare facility's characteristics along services, bed capacity, occupancy, and number of outpatients, and the hospital staff's along HCWM training requirements; level of awareness of HCWM and number of medical staff; and status of the hospitals' healthcare waste management practices on generation, segregation and handling, storage containers, storage area, collection and on-site transport, off-site transport, treatment, final disposal, sanitation and wastewater, regulations and policy and budget. SWOT analysis results contributed to the development of a validated manual on healthcare waste management.

Methods

Descriptive research design was employed to determine the status of the HCWM practices among the 22 level 1 government hospitals in the Provinces of Ilocos Norte, Ilocos Sur, La Union and Pangasinan with three (3) key informants in each hospital, namely: the Chief of Hospital, Chief Nurse, and the Person/Committee responsible for HCWM. Standardized questionnaires based on the United Nations–World Health Organization (UN–WHO) Healthcare Waste Management (HCWM) Rapid Assessment Tool (WHO, 2014) were used and a survey based on observation and key informant interviews were performed by a qualified data collector. Informal hospital interviews were conducted to verify relevant information. The research data were processed using descriptive statistics such as frequency counts, percentages, averages, arithmetic mean, and weighted mean.

Results and Discussion

Profile of the Respondents

The level 1 government hospitals in Northern Philippines were characterized as providers of standard healthcare services like Emergencies,

Medical, Laboratory and Pediatrics, duly authorized by the Department of Health (DOH). Bed capacity was relatively small with bed occupancy of fifty (50) and below. The daily average number of outpatients ranged at 26-50, which was comparably low. The hospital staff were found to be inadequate/insufficient and deficient of HCWM training. Only more than half of the medical staff has received hepatitis B vaccination.

Status of the HCWM

Table 1 summarizes the status of the HCWM practices of the respondents. The hospital-respondents excelled in the areas of HCW storage containers especially in the use of puncture proof for sharps and in HCW offsite transport particularly with the use of municipal/city service. Commendable efforts have been exhibited along HCW generation, HCW segregation and handling and HCW collection and on-site further enhancement in order that the risks of improper management of hospital waste could be mitigated. On the other hand, poor practices were noted in HCW treatment, sanitation and waste water and HCW policy and budget.

Table 1. Summary of the Status of the HCWM Practices of the Level 1 Government Hospitals in Northern Philippines

HCWM Practices	Percentage	DE
HCW Generation	62%	Very Good
HCW Segregation and Handling	66%	Very Good
HCW Storage Containers (use of puncture proof for sharps)	91%	Excellent
HCW Storage Area	60%	Good
HCW Collection and On-site Transport	61%	Very Good
HCW Offsite Transport (Use of municipal/city service)	86%	Excellent
HCW Treatment	36%	Poor
HCW Final Disposal (use of sanitary landfill)	50%	Good
Sanitation and Wastewater (use of wastewater treatment plant)	32%	Poor
HCW Regulations	50%	Good
HCW Policy and Budget	30%	Poor
Average	57%	Good

Note: DE = Descriptive Equivalent

SWOT Analysis

As presented in Table 2, the strengths of the level 1 government hospitals in Northern Philippines were HCWM practices on generation, segregation and handling, storage containers, collection and on-site transport and off-site transport. Their weaknesses included the HCWM practices on storage area, treatment, final disposal, sanitation and wastewater, regulations and policy and budget. Available opportunities were the support offered by the Local Government Units (LGUs), available training programs for HCWM and collaboration with government agencies and non-government

organizations. Threats involved the increased volume of HCWs generated by the respondents, leaching of hospital wastes at the on-site disposal area and lacking of trained health personnel, funding support and inadequacy of supplies and materials for HCWM.

Table 2. Strengths, Weaknesses, Opportunities and Threats (SWOT) Analysis

Strengths HCW Generation HCW Segregation and Handling HCW Storage Containers HCW Collection and On-site Transport HCW Offsite Transport	**Weaknesses** HCW Storage Area HCW Treatment HCW Final Disposal Sanitation and Wastewater HCW Regulations HCW Policy and Budget
Opportunities The support offered by the Local Government Units to the hospital respondents. Training program for healthcare waste management. Collaborating government and non-government agencies like DOH, DENR and DOST.	**Threats** The volume of wastes generated by the level 1 government hospitals. Leaching of infectious, anatomic and chemical wastes, especially at the on-site disposal area. Lack of trained health personnel, funding support and inadequate supplies and materials for HCWM.

Formulation and Validation of the Manual on Healthcare Waste Management

Reference manuals are intended for containing detailed information on processes and procedures. The development of the manual on Healthcare Waste Management was based on the results of the SWOT analysis involving the data gathered from the twenty-two (22) level 1 government hospitals in Northern Philippines. The 118-page manual has seven (7) key sections namely introduction, scope and applicability; legislation and healthcare waste; definitions and classifications of healthcare wastes; waste minimization, segregation, color coding, storage and transport; managing compliance; treatment and disposal; and wastewater management. The first section is the introduction. Section 2 deals with an overview of the main regulatory regimes affecting waste management practices. The third section provides a unified definition/classification approach and assessment framework to healthcare and similar wastes, including infectious, medicinal, offensive and sharps. Section 4 details the types of healthcare wastes, requirements for segregation, packaging and advice on color coding. It also advises on treatment and disposal options, introduces carriage requirements and wastes with special requirements. In the fifth section, it provides guidance on policy content to include ownership, responsibility, audit and pre-acceptance requirements, staff training, transfer documentation, protective equipment and incident reporting. The sixth section defines how

infectious wastes are rendered safe, different options for treatment/disposal, specifies activities producing wastes discharged to foul sewer and associated requirements of the water regulators. Eventually, section 7 underscores the proper treatment of wastewater and its safety, sanitary and regulatory requirements.

The manual is anchored on the premise that the sustainable management of healthcare waste (HCW) is an indispensable part of ensuring that healthcare activities do not pose a risk or potential risk of infection and are securely managed. The World Health Organization (WHO) underscores that poor management of HCW exposes healthcare workers, waste handlers and the community to infections, toxic effects and injuries. This guidance provides a framework for best practice waste management in order to assist the level 1 government hospitals in the Provinces of Ilocos Norte, Ilocos Sur, La Union and Pangasinan and other healthcare waste generators, meet legislative requirements as well as identify strengths for sustainability and opportunities to enhance waste minimization and reduce the associated environmental threats of managing waste. Relatively, this manuscript targets the healthcare practitioners and the support groups within the healthcare institutions.

Furthermore, this manual covers not only the best practices of the twenty-two (22) level 1 government-owned hospitals operating in Northern Philippines in terms of healthcare waste management but also relevant information, advice and guidance. The information in this manual has been compiled from professional sources such as internationally-accepted policies, standards, legislations and plans.

In terms of its recipients, this guidance provides practical advice for all persons at risk, which include staff of the healthcare establishments such as physicians, nurses, health care auxiliaries, and hospital maintenance personnel; patients in the healthcare establishments or receiving home care; visitors, comforters, and caregivers in health care establishment; personnel and workers providing support services and allied to healthcare establishments, such as laundries, waste handling and transportation; persons transporting hazardous healthcare waste; workers and operators of waste treatment and disposal facilities, i.e., sanitary landfill; and the general public. In a hospital setting, the following roles necessitate the use of this manual: directors or senior management; waste managers or transport managers; environmental or sustainability managers; procurements or purchasing; housekeepers and porters; cleaning staff; nursing staff and doctors and support teams; and infection prevention and control staff.

Conclusion

The level 1 government hospitals provide DOH-mandated healthcare services. The HCWM practices of the level 1 government hospitals in Northern Philippines are commendable though they still need to improve along several aspects. The respondents perform well in terms of HCW generation, segregation and handling, and storage but weak in treatment and disposal of the same. The manual on Healthcare Waste Management is a very good reference for the level 1 government hospitals in Northern Philippines.

Recommendations

The validated Manual on Healthcare Waste Management should be a reference guide of the level 1 government hospitals in Northern Philippines. Local Government Units (LGUs) should institute a monitoring mechanism for level 1 government hospitals under their jurisdiction in order to address the lapses in the proper handling of healthcare wastes which requires due diligence in order to avoid the risks involved. A collaborative HCWM program should be initiated among the health facilities, the Local Government Units (LGUs), Department of Health (DOH), Department of Environment and Natural Resources (DENR) and other related government agencies as well as the non-government/private sector to ensure the health and welfare of the public that may be threatened by the improper management of health care wastes. A wide dissemination of HCWM rules and procedures should be initiated in all the government hospitals which shall also include the putting up of safety reminders, posters, and related policy statements related to HCWM. Planning and budgeting of needs for HCWM should be part of the immediate and long-range operational plans of the concerned hospitals and local government units in order to improve their HCWM facilities in terms of personnel, supplies and materials and equipment that will equip and empower them to institute truly compliant HCWM initiatives. The handling of wastes, from its generation, collection, handling, temporary storage, transport and subsequent disposal should be strictly monitored and compliant to standard rules of procedure in order to avoid injuries, infections, contaminations and potential health risks.

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